

What is claimed is:

1. An inter-network connection system comprising:

IP layer switching means for switching an arrival frame to a predetermined route according to an IP table in which a physical transmission path and a logical channel corresponding to an IP address are recorded; and

MAC layer switching means for switching an arrival frame to a predetermined route according to a MAC table in which a physical transmission path and a logical channel corresponding to a MAC address are recorded,

wherein a plurality of physical transmission paths are arranged between the IP layer switching means and the MAC layer switching means,

the IP table includes means for, each time a frame from the MAC layer switching means arrives, updating self-table contents according to the IP address of the frame and the information of a physical transmission path and a logical channel through which the frame passes,

the MAC table includes means for, each time a frame from the IP layer switching means arrives, updating self-table contents according to the MAC address of the frame and the information of a physical transmission path and a logical channel through which the frame passes,

means for detecting fault generation of the plurality of physical transmission paths is arranged, and

means for updating the IP table such that a physical

26 transmission path in which a fault is detected according to the  
27 detection result is bypassed is arranged.

1 2. An inter-network connection system according to  
2 claim 1, wherein the IP layer switching means includes means  
3 for transmitting normality acknowledge signals passing through  
4 the plurality of physical transmission paths to the MAC layer  
5 switching means,

6 the MAC layer switching means includes means for  
7 transmitting response signals of the normality acknowledge  
8 signals through physical transmission paths at which the  
9 corresponding normality acknowledge signals arrive, and

10 the means for detecting fault generation includes means  
11 for checking the normality of the physical transmission path  
12 depending on the presence/absence of the response signal.

1 3. An inter-network connection system comprising:

2 IP layer switching means for switching an arrival frame  
3 to a predetermined route according to an IP table in which a  
4 physical transmission path and a logical channel corresponding  
5 to an IP address are recorded; and

6 MAC layer switching means for switching an arrival frame  
7 to a predetermined route according to a MAC table in which a  
8 physical transmission path and a logical channel corresponding  
9 to a MAC address are recorded,

10 wherein a plurality of physical transmission paths are  
11 arranged between the IP layer switching means and the MAC layer

12 switching means,

13 the IP table includes means for, each time a frame from  
14 the MAC layer switching means arrives, updating self-table  
15 contents according to the IP address of the frame and the  
16 information of a physical transmission path and a logical  
17 channel through which the frame passes,

18 the MAC table includes means for, each time a frame from  
19 the IP layer switching means arrives, updating self-table  
20 contents according to the MAC address of the frame and the  
21 information of a physical transmission path and a logical  
22 channel through which the frame passes,

23 means for measuring the traffics of the plurality of  
24 physical transmission paths is arranged, and

25 means for updating the IP table such that a physical  
26 transmission path in which a traffic volume exceeding a  
27 threshold value is detected according to the measurement result  
28 is bypassed is arranged.